are greedy beyond expression. A European laid out some cotton and coffee to dry in the sun, and when he looked for it after a time the locusts had devoured it all—cotton, coffee, and even the blankets on which the raw material had been spread out." Since then, the locusts have never left the district, and were again very destructive in 1898 (pp. 7, 8).

In South-west Africa, various locust invasions are noticed, from 1831 to the present time; and it is recorded that at Barmen (in the present Orange Colony) in 1866, the

"Fussgänger" (immature locusts) "not only devour all the plants, green or dry, before them, but everything that they can find, including linen and clothes left unprotected; for they creep into the houses even to the bedrooms, and eat up everything" (p. 20).

A pitiful story comes from Little Namaqualand in 1873:—

"On the morning of May 5 I held a prayer-meeting to implore the Lord to send us a little rain, and to put an end to the great drought and distress. In the afternoon clouds actually rose, and we heard a rushing in the air as if it was about to rain; but, alas! the noise was caused by swarms of locusts, which covered the whole place, and completely devoured the little dry grass that was left" (pp. 21, 22).

One is forcibly reminded of the old story of the Adites, who sent a deputation to Mecca to pray for rain, and were answered by a black cloud which sent forth a desolating wind which exterminated the whole tribe.

After discussing the ravages of locusts in the various territories of German Africa, Dr. Sander proceeds to give a full account of the habits, transformations, biology, &c., of the most destructive species of African locusts, and also discusses the best means of contending with their ravages; and the natural enemies of locusts (birds, &c.) are also noticed. Without being overloaded with illustrations, there is a sufficiently good series in the text to render the subject intelligible to the general reader. An appendix contains an interesting edict of Frederick the Great, ordering the destruction of locusts in Prussia in 1753. Dr. Sander's maps illustrate the prevalence of the pest in German East Africa from 1897 to 1899, and in Cape Colony and South-western Africa from 1891 to 1900. His book, though written, of course, for the benefit of the German colonies in Africa, deserves the most serious attention from all who are interested in the welfare and prosperity of our own African possessions.

W. F. K.

OUR BOOK SHELF.

Applied Mechanics for Beginners. By J. Duncan, Wh.Ex., A.M.Inst.C.E., &c. Pp. x+324. (London: Macmillan and Co., Ltd., 1902.) Price 2*s.* 6*d.*

WITH the development of the mechanical laboratory in technical schools and colleges, the teaching of mechanics has in recent years undergone a quiet revolution. Experiments are no longer confined to the few made by the teacher, but the students now all take a share in this kind of work, which has become an important part of the school or college course, being of great value, as affording the training in inductive methods which in former times was often neglected.

The volume under review shows the influence of these prevailing conditions. A considerable portion of the book is devoted to the description of laboratory appliances, the methods of making tests and the kind of information to be got therefrom. Some of the apparatus is of quite a simple character, such as a student may readily make and use at home, and yet from which fundamental mechanical principles can be verified and illustrated in a satisfactory manner. In other cases, the experiments are more elaborate; those dealing with hydraulics strike us as being particularly good.

Another important part of a course in applied mechanics is the working of many numerical examples; here also the requirements are well met, and the student is amply provided with material in great variety. The answers to the examples are given at the end of the volume.

There are a few defects which may probably be remedied in great measure in a future edition. The diagrams are well drawn and clearly printed, but in some cases the letters of reference are unfortunately too small. The author is not very happy in his definitions of the engineer's units of mass and force, and occasionally his enunciations of fundamental principles of mechanics could be improved by revision. The treatment of vectors is rather weak. We should like to have seen more use made of the *radian* measure of angles and angular velocities in the many problems involving rotation.

These faults do not detract materially from the general merits of the book, which is one that can be confidently recommended for the use of students who are beginning the subject of applied mechanics and wish for guidance in obtaining an experimental knowledge of the foundations on which the science is built, and for an account of many of its applications in the arts.

Compte rendu du deuxième Congres international des Mathématiciens tenu à Paris, 6 au 12 Aout, 1900. Pp. 450. (Paris: Gauthier-Villars, 1902.).

AMONG the innumerable congresses held at the Paris Exhibition, this one dropped completely out of sight. On arrival at the advertised place of meeting in the Hall of Congress, it was found occupied already by some 1500 deaf-mutes, assembled in conclave; naturally they could give us no information. The Mathematical Congress was discovered at last, on the top floor of the Sorbonne, where it was left severely alone by the French professors, too dignified to meet the herd of visitors on equal terms.

The Physical Congress, held simultaneously, carried off all but the mere pure mathematicians, who enjoyed themselves by reading papers to each other on arithmetic and algebra, analysis and geometry, bibliography and teaching methods.

An eloquent address by M. Poincaré, the president, who put in an appearance at the closing ceremony, on the *rôle* of intuition and logic in mathematics, an extract from a lecture by Mittag-Leffler on a page of the life of Weierstrass, Hilbert's discourse on the mathematical problems of the future, and communications by M. Cantor on mathematical historiography and by Vito Volterra on Betti, Brioschi and Casorati, these form the most important part of the volume.

Wood: a Manual of the Natural History and Industrial Applications of the Timbers of Commerce. By G. S. Boulger. Pp. viii + 369. (London: Edward Arnold, 1902.) Price 7*s.* 6*d.* net.

THE contents of this ugly volume, of heavy paper and with narrow margins, are more worthy of attention than its exterior suggests, and comprise an immense amount of information about the timbers of commerce from many points of view. That it is a compilation which would probably never have seen the light had not the works of

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Hartig, Nördlinger, Laslett and Marshall Ward preceded it may be a safe surmise, but the author has done his work much in his own way, and, on the whole, has done it well, and acknowledges his indebtedness to the above and to other writers. The longest section, that on the sources, characters and uses of the woods of commerce, which occupies more than two hundred pages of the three hundred and fifty composing the book, abounds in interesting facts about the foreign and colonial timbers now so largely imported into this country, though why the word "Acacia," on p. 141, is limited to "Robinia" and "Eucryphia" is the more puzzling since the author shows, on p. 341, that the wattles of Australia are the true plants of that genus.

The sections on the recognition and classification of woods, on seasoning, on the supplies of wood and on testing are also good; those on the origin, structure and development and on the defects of wood are less so. Indeed, the whole subject of the microscopic structural characters is very poorly treated, and the appendix on the microscopic examination of wood might as well have been omitted. This is a pity, since it is just in this direction that so much interesting and important work has been done of late, and the author's meagre treatment of this theme and his omission of any mention of the publications of Müller, Mer, Strasburger and other investigators suggest that he is here on unfamiliar ground. Moreover, certain slips, such as the confusion of the schlerenchyma of a peach stone with wood (p. 2), the denial of wood to the so-called herbaceous plants and the retention of the term "exogenous" (p. 3), the inadequate treatment of cellulose (p. 6), the denial of tracheæ to the protoxylem of Conifers (p. 19) and the explanation of the term "desmogen," are signs pointing to the same conclusion.

On the other hand, there are some capital photographic reproductions of the appearances of various woods in transverse sections, and the material is well arranged and rendered accessible by what appears to be a very complete index.

L'Eau dans l'Alimentation. By F. Malméjac. Pp. 312. (Paris: Felix Alcan, 1902.) Price 6 francs.

It is quite true, as the author of this work states, that the great problems connected with the purification of water and its safety or danger when used for drinking purposes are not yet solved, but although he claims—and not without reason—that his work is something more than a compilation, inasmuch as it contains results of special study on the points which have appeared to him the least clear or the more controversial, the reader who has studied, say, the works by Thresh or Mason on the subject will find little to learn from the present volume.

The work is certainly a useful and interesting one, but it scarcely justifies the eulogistic preface written by M. F. Schlagdenhauffen, honorary director of the Higher School of Pharmacy of Nancy, from which the reader would conclude that the present volume was almost an epoch-making contribution to an important subject.

The book is divided into five parts, which are subdivided into chapters. The first part deals with water in general, including the microscopic, the chemical and the bacteriological examinations, and the other four parts deal with the organic matter of water, the germs of water, the filtering value of different earths and the purification of water.

Our Dogs' Birthday Book. Arranged by Mrs. F. H. Barnett. With Twelve Pictures of Champion Dogs. Pp. 144. (London: George Allen, 1902.)

A BIRTHDAY book of the familiar kind, except that the quotation under each day of the year is concerned with dogs.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

The Hydrographical Work of the North Sea Investigation Committee (Scotland).

In weather of exceptional severity, Lieutenant and Commander Sharp, of H.M.S. *Jackal*, has just brought his second hydrographical cruise to a successful issue. The *Jackal* left Aberdeen on December 4, and followed approximately the same course (on lines laid down by Mr. H. N. Dickson) as on her autumn cruise in August-September (*cf.* NATURE, October 30, 1902), that is to say, northwards to Lerwick, thence in a north-easterly course to near the Norwegian coast, then westward to Faeroe and back along a somewhat more southerly track, passing between Shetland and Orkney and out into the North Sea as far as the meridian of 0°. The last observations were made on December 15. About 125 water-samples were obtained at various depths, in full series, at twenty stations, and surface samples were collected in addition hour by hour. Captain Sharp bore, on this occasion, the whole responsibility of collecting the samples and observing the temperatures, and I venture to think that, in spite of the worst possible weather, he has achieved remarkable success. The water-samples are being estimated in the laboratory of my colleague, Prof. Walker, and when this work is done, the whole of the data will be handed over to the hydrographers; but the temperature records are in themselves interesting, so much so that I think it right to publish them in the following brief abstract.

The stations were as follows (numbered according to those of the August cruise with which they approximately correspond:—ii., 58° 36′ N., 1° 46′ W.; iv., 59° 17′ N., 1° 30′ W.; vi., 60° 37′ N., 0° 30′ E.; vii., 61° 12′ N., 1° 52′ E.; viii., 61° 40′ N., 3° 4′ E.; ix., 61° 39′ N., 2° 0′ E.; x., 61° 38′ N., 0° 33′ E.; xi., 61° 50′ N., 1° 0′ W.; xii., 61° 0′ N., 1° 18′ W.; xiii., 61° 10′ N., 2° 9′ W.; xiv., 61° 23′ N., 3° 25′ W.; xv., 61° 38′ N., 4° 39′ W.; xvi., 61° 44′ N., 6° 3′ W.; xvii., 61° 13′ N., 6° 34′ W.; xviii., 60° 53′ N., 5° 30′ W.; xix., 60° 35′ N., 4° 26′ W.; xx., 60° 13′ N., 3° 9′ W.; xxi., 59° 40′ N., 1° 15′ W.; xxii., 59° 32′ N., 0° 2′ E.; xxiv., 58° 53′ N., 0° 25′ W.

To take first the surface-temperatures. These fluctuated much in the first part of the course from the entrance of the Moray Firth to Lerwick. Starting at 7°·5, the temperature rose opposite the Pentland Firth to 8°·8, fell off the Orkneys to 6°·6, rose again in the neighbourhood of Fair Isle to 9°·3, and after falling as low as 5°·4, rose to 8°·4 at Lerwick. Similar temperatures (8°·3–8°·5) were then met with as far as Station vii., after which point there was a rapid rise to 9°·6, followed by an exceedingly sudden drop to 6°·6 (the salinity dropping from about 35°·3 to 32°·6) near Station viii., off the Norwegian coast. Running westward, temperatures ranged in the neighbourhood of 9°·5 all the way to the middle of the Faeroe Channel, and then dropped between Stations xiv. and xv. to 7° at the latter point. They rose again as Faeroe was approached, to 8° or a little less; and on the homeward and more southerly course, a colder current was again crossed, this time in a broader and apparently double belt, between 4° and 5° W. longitude, with temperatures of 6°·6 to 6°·8. Eastward of 4° W., a rapid rise took place to 8°·9, rising further to 9°·4 a little to the east of 3°, and thereafter the curve fell, with considerable fluctuations, to about 8° at the limit of Station xxii. (0° 2″ E.).

Passing to the deep-water temperatures, we have, on the line from the Moray Firth to Lerwick (Stations ii., iv. and xxi.), everywhere warmer underlying colder water, the readings at 0 and 100 metres being respectively 8°·2–8°·8, 8°·8–9° and 8°–8°·6.

Between Lerwick and the coast of Norway, we have firstly at Station vi. slightly irregular readings, falling from 8°·5 at the surface to 8°·2 at 130 m.; at Station vii., the surface-water of 8°·3 has underneath it warmer water to 8°·85 at 60 m., cooling to 8°·65 at 140 m.; while at Station viii., a broad zone of similarly warm water underlies the very cold (6°·7) surface-layer (6°·05 at 20 m.), giving us readings of 8°·3 at 100 m., 8°·7 at 200 m., below which level the temperature falls again to 6°·0, at 380 m., near the bottom. Turning westward, we have at Station ix.

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